CLAIMS

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Cancelled)

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Cancelled)

12. (Previously presented) A squaring cell comprising:

a first sub-exponential current generator for generating a first current responsive to an input signal; and

a second sub-exponential current generator for generating a second current responsive to the input signal;

wherein the first and second exponential current generators are coupled together to combine the first and second currents.

13. (Previously presented) A squaring cell according to claim 12 wherein each of the sub-exponential current generators includes:

a constant current stack coupled to a first input terminal; and

a variable current stack coupled to a second input terminal and the constant current stack.

14. (Previously presented) A squaring cell according to claim 12 wherein each of the sub-exponential current generators includes a back-bias component.

15. (Previously presented) A method for squaring a signal comprising:

generating a first current which varies sub-exponentially responsive to the signal such that the first current increases when the signal increases;

generating a second current which varies sub-exponentially responsive to the signal such that the second current decreases when the signal increases; and

combining the first and second currents.

16. (Previously presented) A method according to claim 15 further comprising adding a back-bias effect to the first and second currents.

17. (Previously presented) A method for squaring a signal comprising:

generating a first current which varies exponentially responsive to the signal such that the first current increases when the signal increases;

generating a second current which varies exponentially responsive to the signal such that the second current decreases when the signal increases;

combining the first and second currents; and

scaling the first and second currents responsive to a control signal while generating and combining the first and second currents.

18. (Previously presented) A method according to claim 17 further comprising adding a back-bias effect to the first and second currents.

19. (Previously presented) A method for squaring a signal comprising:

generating a first current which varies exponentially responsive to the signal such that the first current increases when the signal increases;

generating a second current which varies exponentially responsive to the signal such that the second current decreases when the signal increases;

combining the first and second currents; and

altering the first and second currents so as to provide sub-exponential functions.

20. (Previously presented) A method according to claim 19 further comprising adding a back-bias effect to the first and second currents.

21. (Previously presented) A multiplier comprising:

a first sub-exponential current generator for generating a first current responsive to a first input signal and a second input signal;

a second sub-exponential current generator for generating a second current responsive to a third input signal and a fourth input signal;

a third sub-exponential current generator for generating a third current responsive to the first input signal and the fourth input signal; and

a fourth sub-exponential current generator for generating a fourth current responsive to the third input signal and the second input signal;

wherein the first and second sub-exponential current generators are coupled together to combine the first and second currents; and

wherein the third and fourth sub-exponential current generators are coupled together to combine the third and fourth currents.

22. (Previously presented) A multiplier according to claim 21 wherein each of the sub-exponential current generators includes:

a constant current stack coupled to a first input terminal; and

a variable current stack coupled to a second input terminal and the constant current stack.

23. (Previously presented) A multiplier according to claim 21 wherein each of the sub-exponential current generators includes a back-bias component.

24. (Previously presented) A method for multiplying a first signal and a second signal, wherein the first input signal is the difference between a first signal and a third signal, and the second input signal is the difference between a second signal and a fourth signal, the method comprising:

generating a first current which varies sub-exponentially responsive to the first signal and the second signal;

generating a second current which varies sub-exponentially responsive to the third signal and the fourth signal;

generating a third current which varies sub-exponentially responsive to the fourth signal and the first signal;

generating a fourth current which varies sub-exponentially responsive to the second signal and the third signal;

combining the first and second currents; and

combining the third and fourth currents.

25. (Previously presented) A method according to claim 24 wherein:

combining the first and second currents includes summing the first and second currents; and

combining the third and fourth currents includes summing the third and fourth currents.

26. (Previously presented) A method according to claim 24 further including scaling the first, second, third, and fourth currents responsive to a control signal while generating and combining the currents.

27. (Previously presented) A method according to claim 24 further comprising adding a back-bias effect to the first, second, third and fourth currents.

28. (Previously presented) A squaring cell comprising:

a first exponential current generator for generating a first current responsive to an input signal; and

a second exponential current generator for generating a second current responsive to the input signal;

wherein the first and second exponential current generators are coupled together to combine the first and second currents; and

wherein each of the exponential current generators includes:

a current source;

first and second junctions coupled in series between a first input terminal and the current source;

third and fourth junctions coupled in series between a second input terminal and a node;

a fifth junction coupled between the current source and the node; and

a resistor coupled between the node and the current source.

29. (Previously presented) A squaring cell according to claim 28 wherein each of the exponential current generators further includes a second resistor coupled between the third and fourth junctions.

30. (Previously presented) A squaring cell comprising:

a first exponential current generator for generating a first current responsive to an input signal; and

a second exponential current generator for generating a second current responsive to the input signal;

wherein the first and second exponential current generators are coupled together to combine the first and second currents;

wherein each of the exponential current generators includes:

a constant current stack coupled to a first input terminal; and

a variable current stack coupled to a second input terminal and the constant current stack; and

wherein each constant current stack comprises a resistor arranged to reduce the standing current through the stack.

31. (Previously presented) A squaring cell comprising:

a first exponential current generator for generating a first current responsive to an input signal; and

a second exponential current generator for generating a second current responsive to the input signal;

wherein the first and second exponential current generators are coupled together to combine the first and second currents; and

wherein each of the exponential current generators includes:

a first transistor of a first polarity having a base coupled to a first input terminal for receiving a first side of the input signal;

a second transistor of a second polarity having an emitter coupled to an emitter of the first transistor, a base, and a collector coupled to a node;

a current source coupled to the base of the second transistor;

a third transistor of the first polarity having a base coupled to a second input terminal for receiving a second side of the input signal;

a fourth transistor of the second polarity having an emitter coupled to an emitter of the third transistor, and a base coupled to the node; and

a resistor coupled between the node and the current source.

32. (Previously presented) A squaring cell according to claim 12 wherein the first and second currents comprise substantially sub-exponential currents.

33. (Previously presented) A method according to claim 17 wherein the first and second currents vary substantially sub-exponentially.

34. (Previously presented) A method according to claim 19 wherein the first and second currents vary substantially sub-exponentially.

35. (Previously presented) A multiplier according to claim 21 wherein the first, second, third and fourth currents comprise substantially sub-exponential currents.

36. (Previously presented) A method according to claim 24 wherein the first, second, third and fourth currents vary substantially sub-exponentially.